

2013

California Adolescent Sexual Health Needs Index

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Table of Contents

Introduction

A Focus on Social Determinants of Health

Small Area Geographical Targeting

Rationale and Description of Indicators

Calculation of CASHNI Scores

What the CASHNI Score Means

References and Technical Notes

Table 1. List of California MSSAs and California Adolescent Sexual Health Needs Index (CASHNI) Scores

Figure 1. Map of CASHNI Scores Across California MSSAs

Figure 2. Bay Area Detail Map

Figure 3. Los Angeles County Area Detail Map

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2013 California Adolescent Sexual Health Needs Index (CASHNI)

Introduction

Every youth deserves access to high-quality sexual and reproductive health information and support services. California has a long and successful history of providing such supports to adolescents.¹ Over the past 20 years, these efforts have been reflected in steadily declining birth rates among California females aged 15 – 19.² Despite these successes, the number of youth, families, and communities impacted by early childbearing remains high. Moreover, in California, racial, ethnic, and geographical disparities in adolescent sexual and reproductive health access and outcomes persist. In recognition of these variations across the State, the California Department of Public Health/Maternal, Child and Adolescent Health Division (CDPH/MCAH) developed the California Adolescent Sexual Health Needs Index (CASHNI). This index will allow CDPH/MCAH and others to target available resources for primary and secondary adolescent pregnancy prevention programs to areas across the State with the greatest need for sexual and reproductive health services and supports.

A Focus on Social Determinants of Health

Sexual health is defined by the World Health Organization as “a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity.”³ Supporting sexual health in adolescents requires acknowledgement that sexuality is a normative part of development and that adolescents are active agents in their sexual and reproductive choices. Not all adolescents benefit from the same choices, however. There are a number of social determinants of health that limit individual choices, including personal safety, neighborhood characteristics, systemic racial and income inequalities, healthcare and educational access and quality differences.⁴ These determinants and disparities and the related sexual and reproductive health outcomes can have profound impacts on adolescent’s health throughout life.

Small Area Geographical Targeting

Geography is a key predictor of health disparities and outcomes. A common geography for health outcome data is the county.⁵ However, there is substantial variation within California counties in the number and rate of adolescent births that is masked when looking at overall county rates.⁶ To address this within county variation, the CASHNI was developed at the Medical Service Study Area (MSSA) level. MSSAs are clusters of census tracts that do not cross county boundaries and were developed to identify areas of unmet priority for health care coverage.⁷ MSSAs are recognized by the U.S. Health Resources and Services Administration, Bureau of Health Professions' Office of Shortage Designation as rational service areas for purposes of designating Health Professional Shortage Areas, Medically Underserved Areas and Medically Underserved Populations. MSSAs are revised, as needed, with community input following each decadal census. Thus, MSSAs are a stable, locally meaningful sub-county geography that can be used for program targeting.



Rationale and Description of Indicators

CASHNI indicators were chosen from available youth data in California⁸ related to one of two broad CDPH/MCAH adolescent sexual health goals: (1) increase access to high-quality sexual health programs; and, (2) reduce the total number of adolescent births. In total, eight indicators were selected for the CASHNI; a summary of inclusion rationale is provided below (see technical notes for more information). All data is from 2013, the most recent year of birth data available.

- The average number of annual live births (NLB) to females aged 19 and below⁹ is included as an indicator of expectant and parenting youth and the minimum adolescent population in need of sexual and reproductive health services in an MSSA. If efforts to reduce total adolescent births across the state are to be successful, they must be directed towards areas with the greatest number of births.
- The adolescent birth rate (ABR)¹⁰ is the relative risk of adolescent births across geographies with different population sizes. The ABR is included in the calculation of overall community risk because adolescents in areas with higher ABRs have a greater likelihood of giving birth than those in areas with lower ABRs.
- The percentage of repeat births (PRB)¹¹ is the proportion of live births to adolescents who have multiple children. Repeat adolescent births are frequently correlated with short birth intervals, increasing the risk of negative health outcomes for mother and infant.¹² These youth may require additional resources to achieve access to reproductive health care; academic, and employment success; and in transitioning to a healthy and successful adult.
- The gonorrhea incidence rate (GIR)¹³ is an indicator of adolescent sexual health outcomes beyond pregnancy prevention. We have included gonorrhea rather than Chlamydia because Gonorrhea is less likely to be asymptomatic in both males and females, requires more resources per case to treat and evinces greater racial and ethnicity disparities.¹⁴
- The percentage of youth living in areas of concentrated poverty (PYP)¹⁵ is included to reflect the severely limited resources and greater needs among populations living in concentrated areas of low income. Consistent with the social determinants of health framework, we have included this area-based indicator rather than an individual measure of income to capture systemic influences.
- The percentage of youth living in racially isolated areas (RIS)¹⁶ is included as a direct measure of racial inequality across MSSAs. Racially isolated areas of people of color tend to have fewer neighborhood resources, employment opportunities and lower quality schools all of which negatively affect health.¹⁷



- The high school dropout rate (HDO)¹⁸ is reflective of both community opportunities for positive future outcomes and populations of youth who are unlikely to receive sexual health information and services through mandated education.
- Rural and urban status (RUS)¹⁹ addresses resources needed in an MSSA to deliver sexual and reproductive health programming. Rural healthcare disparities are well documented, and rural populations face less healthcare access at all levels (e.g., preventative, specialty, emergency).²⁰ In addition, rural youth face additional challenges in accessing reproductive health care due to increased confidentiality concerns in small close-knit communities, limited public transportation and the need to travel long distances to a pharmacy or family planning clinic.²¹

Calculation of CASHNI Scores

The MSSA level CASHNI Score was calculated as follows:

- a. The ABR, PRB, GIR, PYP, RIS, HDO were standardized to the normal distribution and summed to form an index of overall community risk.²²
- b. Overall community risk was ranked from 1 to 5 based on the distribution of sums and rankings were multiplied by 3 for rural MSSAs.²³
- c. Resulting values (range 1 – 10) were multiplied by the age-adjusted NLB.²⁴

What the CASHNI Score Means

CASHNI scores range from 1 to 2595 across California's 542 MSSAs (see Table 1 for a list of CASHNI scores for each MSSA organized by county).²⁵ Higher scores indicate a greater community need for adolescent sexual and reproductive health services.

References and Technical Notes

1. CDPH (2015). *CDPH 2013 adolescent birth rate (ABR) press release frequently asked questions*. Retrieved from <http://www.cdph.ca.gov/data/statistics/Documents/2013ABRpressreleaseFAQdocument.pdf>
2. CDPH (2015). *California teen births: 2000 to 2013*. Retrieved from <http://www.cdph.ca.gov/data/statistics/Documents/2013ABRPressRelease.pdf>
3. The World Health Organization. (2006). *Defining sexual health: Report of a technical consultation on sexual health*, 28-31 January 2002, Geneva. Retrieved from http://www.who.int/reproductivehealth/publications/sexual_health/defining_sexual_health.pdf
4. Centers for Disease Control and Prevention (October, 2010). *Establishing a holistic framework to reduce inequities in HIV, viral hepatitis, STDs, and tuberculosis in the United States*. Atlanta (GA): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved from <http://www.cdc.gov/socialdeterminants/docs/SDH-White-Paper-2010.pdf>
5. University of Wisconsin Population Health Institute (2014). *County Health Rankings 2014*. Retrieved from http://www.countyhealthrankings.org/sites/default/files/state/downloads/CHR2014_CA_v2.pdf
6. Chabot MJ, Campa M, Barr L, Damesyn M. (2015). *Adolescent Birth Rates, Percentage of Repeat Births and Births in High Poverty Areas by Medical Service Study Area: California*, Aggregated 2010-2012. California Department of Public Health, Maternal, Child and Adolescent Health Division. Sacramento CA.
7. California's Office of Statewide Health Planning and Development, Medical Service Study Areas, retrieved from <http://www.oshpd.ca.gov/hwdd/MSSA/index.html>.
8. Selection of indicators was limited to available data. Although CDPH/MCAH understands adolescent sexual health is larger than pregnancy prevention (e.g., Sisson, 2012²⁶), there is currently no statewide data on California adolescents reflective of the holistic sexual health model (e.g., relationship information, pregnancy intentions). Data available at the MSSA level is further limited.
9. The number of adolescent births in an MSSA was determined by geocoding mothers' addresses from the *Birth Statistical Master File* (California Department of Public Health, Center for Health Statistics and Informatics) using a 3-step process. 1) Raw address data was submitted to ERSI ArcGIS software for geocoding; 2) Uncoded addresses were matched to an MSSA by zip code (where there was 1:1 relation between a zip code and MSSA); 3) remaining uncoded addresses were manually cleaned (e.g., fixing misspelling, removing apartment numbers) and resubmitted for geocoding. This process resulted in 98.5% of the 104,850 adolescent births in 2011-2013 being successfully geocoded.
10. The adolescent birth rate (ABR) is the number of live births to females aged 15-19 divided by the female population aged 15-19, multiplied by 1,000. Aggregated birth data for years 2011-2013 were used to produce stable rates. MSSA population was calculated by applying the 2010 racial and ethnic distribution of the female population aged 15-19 from the census tract aggregated to MSSA to the California Department of Finance county population data for 2011-2013 using California, Department of Finance, Report P-3: State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010-2060. Sacramento, California, December 2014 and U.S. Census Bureau; 2010 population by census tract; using American FactFinder; <http://factfinder2.census.gov>.
11. Percentage of repeat births (PRB) is the number of live births to females with a previous live birth divided by the total number of live births among females aged 15-19, multiplied by 100; excludes births where birth order is unknown or the number of previous live births is greater than 6 (less than 1% of births excluded).
12. Conde-Agudelo, A., Rosas-Bermúdez, A., & Kafury-Goeta, A.C. (2006). Birth spacing and risk of adverse perinatal outcomes: A meta-analysis. *JAMA*, 295(15):1809-1823.
13. The gonorrhea rate (GIR) is the number of reported gonorrhea cases to youth aged 15 – 19 divided by the youth population aged 15-19, multiplied by 100,000. 2011–2013 incidence and population data were aggregated to produce stable rates. Counts of Gonorrhea were geocoded and provided by the California Department of Public Health, STD Control Branch. Youth population was calculated by applying the 2010 adolescent population aged 15-19 from the census tract aggregated to MSSA to the California Department of Finance county population data for 2011-2013 using California, Department of Finance, Report P-3: State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010-2060. Sacramento,

California, December 2014 and U.S. Census Bureau; 2010 population by census tract using American FactFinder; <http://factfinder2.census.gov>.

14. Guidance on selection of STI indicator for adolescent population provided by California Department of Public Health, STD Control Branch, July 2014.
15. Percentage of youth living in areas of concentrated poverty (PYP) is the number of children under 18 years of age living in a census tract where 20% or more of the total population is under the federal poverty level divided by the total number of children under 18 years of age in that census tract, aggregated across census tracts in an MSSA. Data from U.S. Census Bureau; 2013 American Community Survey 5-year estimates; using American FactFinder; <http://factfinder2.census.gov>.
16. Methodology to calculate racial isolation (RIS) adapted from The Furman Center for Real Estate and Urban Policy (http://furmancenter.org/files/sotc/The_Changing_Racial_and_Ethnic_Makeup_of_New_York_City_Neighborhoods_11.pdf) where census tracts were defined as racially isolated if greater than 50% of the population was African American, Hispanic or American Indian/Native American and less than 20% of the population was White. Percentage of youth living in racially isolated areas of African Americans, Hispanics and American Indians/Native Americans is the number of children under 18 years of age living in racially isolated census tracts aggregated across census tracts in an MSSA divided by the total number of children under 18 years of age in that MSSA. Data from U.S. Census Bureau; 2012 American Community Survey 5-year estimates; using American FactFinder; <http://factfinder2.census.gov>.
17. Williams, D. R., & Collins, C. (2001). Racial residential segregation: A fundamental cause of racial disparities in health. *Public health reports*, 116(5), 404. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1497358/pdf/12042604.pdf>
18. High school dropout rate (HDO) is the 2013 percentage of youth in all school cohorts that dropout of school divided by the adjusted number of youth in all school cohorts. Because school catchment boundaries and districts cross multiple levels of California geography (census tracts, MSSAs, counties) HDOs are CDE published county rates applied across MSSAs in that county. Although this data is at the county rather than MSSA, educational opportunities and outcomes are too important for adolescent well-being to exclude from the index. Data retrieved from California Department of Education, DataQuest <http://dq.cde.ca.gov/dataquest/>
19. Rural and Urban Status (RUS) is defined by the State of California's Office of Statewide Health Planning and Development using population size and density. Frontier MSSAs are included in the rural category. For more information on MSSA development and uses, see <http://www.oshpd.ca.gov/hwdd/MSSA/index.html>.
20. California State Office of Rural Health (2012). Rural Health Report 2012. Retrieved from: <http://www.dhcs.ca.gov/services/rural/Documents/CSRHAPresentationNov132012.pdf>
21. Garside, R., Ayres, R., Owen, M., Pearson, V., & Roizen, J. (2002). Anonymity and confidentiality: Rural teenagers' concerns when accessing sexual health services. *The Journal of Family Planning and Reproductive Health Care*, 28, 22-36.
22. Z-scores calculated for each indicator separately based on the mean and standard deviation across all 542 MSSAs. MSSAs with 0 births (n = 3) and/or 0 reported cases of gonorrhea (n = 173) were given a rate of 0. Z-scores greater than 3 were truncated to a value of 3 before summing the six indicators of community risk.
23. Summed z-scores were sorted by MSSA and assigned a value based on their relative distribution. MSSAs in the bottom 0 – 39% of the distribution were ranked as lowest risk with a value of 1; MSSAs 40 – 59% = 2; MSSAs 60-79% = 3; MSSAs 80-89% = 4; and, MSSAs >90% were ranked highest with a value of 5. Conceptualizing this is akin to saying that MSSAs with the greatest level of risk have 5 times greater need than those with the lowest level of risk. Similarly, by multiplying risk by 3 for rural (and frontier) MSSAs we are acknowledging that irrespective of total risk, the cost of providing services in rural MSSAs is at least three times as much as the cost of delivering services in urban MSSAs.
24. Childbearing among very young adolescents poses unique risks both to mother and child. To account for the greater needs of those younger relative to older adolescents, the NLB was weighted accordingly: multiplied by 3 for aged under 15; multiplied by 1.5 for aged 15-17; and multiplied by 0.5 for aged 18-19.
25. CASHNI scores less than 6 are noted with an asterisk to prevent constructive identification of births.
26. Sisson, G. (2012). Finding a way to offer something more: Reframing teen pregnancy prevention. *Sexuality Research and Social Policy*, 9, 57-69.



Table 1. List of California MSSAs and California Adolescent Sexual Health Needs Index (CASHNI) Scores, sorted by CASHNI Score within County

MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI
Alameda		18b	81	Imperial		Los Angeles		77.2	255
2d	918	18e	75	49	1120	78.2fff	1534	78.2bb	251
2h	354	18c	28	48	1085	78.2ggg	1344	78.2ww	251
2c	251	18a	26	50	706	78.2ooo	1293	78.2hhh	245
2n	241	17	24	47	188	78.2ss	1038	78.2www	245
2m	61	18g	20	46	0	77.1c	1037	78.2zz	241
2f	57	18j	7	Inyo		78.2bbb	1016	78.2v	228
2g	42	18h	*	53	75	78.2b	1008	78.2vv	213
2a	32	18i	*	55	17	78.2mmm	991	78.2lll	183
2j	29	Del Norte		54	12	78.2jjj	975	78.2q	177
1.2	23	19	176	Kern		78.2h	953	78.2qqq	173
1.1	23	El Dorado		66b	2191	78.2s	905	78.2qq	158
2l	20	23.3	64	61	1530	78.2ccc	832	78.2eee	155
2i	15	24	36	58.2	915	78.2oo	799	78.2ff	154
2e	13	23.2	25	66a	848	78.2d	732	77.1b	136
2k	8	23.1	13	58.1	820	78.2iii	647	78.2iiii	129
2b	7	22	11	66c	748	78.2l	645	78.2aaaa	124
Alpine		Fresno		60	693	78.2ll	641	78.2n	108
3	*	30	2595	65	674	78.2ddd	608	76.1b	107
Amador		32	1412	57.2	548	78.2c	602	78.2uu	95
4	31	35d	1293	64	442	77.1a	561	78.2a	76
5	7	35e	1158	66d	129	78.2nnn	557	77.5	75
6	*	35c	949	62	118	78.2uuu	548	78.2eeee	73
Butte		25	758	63	75	78.2p	543	78.2kkk	66
10	483	31	657	59	60	78.2ffff	510	78.2pp	64
9	66	29	443	57.1	17	78.2ppp	505	78.2ii	59
8	57	35f	364	Kings		78.2i	497	78.2cccc	58
7.1	51	28	290	68	648	78.2r	487	78.2x	55
11	22	35b	274	69	362	78.2e	421	78.2gggg	40
7.4	7	27	224	67	340	78.2sss	385	78.2xxx	36
7.2	*	26	183	Lake		78.2k	384	78.2z	35
7.3	*	35a	45	71.1	370	78.2g	366	78.2rrr	27
Calaveras		Glenn		70.2	87	78.2yyy	332	78.2tt	25
12	37	36.1	168	70.1	52	78.2m	329	78.2dddd	25
Colusa		37	68	71.2	18	78.2jjjj	303	78.2dd	22
16.1	54	36.2	41	71.3	13	77.3	296	78.2nn	20
16.3	34	Humboldt		Lassen		78.2zzz	288	76.2	19
16.2	18	39	225	72	43	78.2cc	280	78.2ttt	19
15	14	42	168	75	26	78.2bbbb	278	78.2hh	18
Contra Costa		38	118	74	*	78.2kk	268	78.2vvv	17
18d	482	40	21	73	*	78.2hhhh	267	78.2j	17
18f	422	44	9			78.2gg	256	76.1a	16

MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI
Los Angeles		96	650	116n	44	129.1	40	151a	45
78.2ee	16	95	405	115.2a	29	129.3	38	143	44
78.2o	16	97.1	262	116m	25	131c	31	144.1	38
78.2t	15	97.3	89	116e	24	127	23	151d	24
78.2rr	14	Modoc		115.2d	22	130	15	145.3	17
78.2y	12	98	7	115.2b	15	Sacramento		148	8
78.2f	12	99	6	115.2c	15	139f	836	San Diego	
78.2mm	11	100	*	116o	14	139j	836	161j	651
78.1	10	Mono		116j	11	139k	686	161c	635
78.2xx	9	103	37	116u	9	139c	272	161g	559
78.2w	9	102	10	116t	7	139g	234	161d	537
78.2jj	8	Monterey		116d	7	139a	215	156e	513
78.2kkkk	7	107	1698	116v	6	139h	156	161k	437
77.4	7	109.2	1117	Placer		139d	100	156d	282
78.2u	*	105	420	121.1	38	139b	74	161h	234
78.2aa	*	109.1	378	119	24	136	54	156a	209
78.2yy	*	108	197	117	23	139l	45	161s	164
Madera		110	34	118	19	139m	27	161l	124
80	2220	106	*	121.2	16	137	26	160	120
79.2	278	104	*	120	*	139i	18	159	114
79.1	60	Napa		Plumas		139e	16	161i	95
Marin		112.1	82	122	8	138	10	161a	79
83b	42	112.2	47	124	7	San Benito		161f	75
83a	*	111.2	38	123.1	6	140	281	161e	69
82	*	112.3	8	125	*	San Bernardino		158.1	57
81	*	111.1	7	123.2	*	151g	1446	161t	44
Mariposa		111.3	*	Riverside		151k	1152	161u	40
85	28	Nevada		128	834	151h	1133	156f	39
86	*	113	174	133.1	524	145.2	1120	156b	35
Mendocino		114	44	132	521	151f	910	153.2	34
93.1	182	Orange		129.4	403	145.1a	800	155	28
92	47	116b	896	135d	388	149	750	161b	22
89	37	116l	611	135a	382	151c	627	161m	19
87.1	36	116g	489	133.3	356	144.2	372	156c	19
91	34	116i	321	134	354	144.3	269	161v	18
93.2	18	116c	234	126	269	145.1b	247	152	15
87.2	10	116r	226	135c	254	151b	227	153.1	15
93.4	7	116q	208	135b	248	151l	201	161q	15
88	6	116f	154	135g	248	151e	174	161o	14
93.5	*	116a	117	129.2	173	151i	131	157	14
93.3	*	116h	93	135e	107	150	114	161p	10
90	*	116s	78	131a	95	146	98	161n	9
Merced		116k	61	133.2	56	151j	90	154	7
97.2	985	115.1	54	131b	51	147	74	161r	*
94	767	116p	53	135f	51	142	46	158.2	*

MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI
San Francisco		Santa Barbara		189.1	*	212.2	110	240c	25
162f	304	180.1	707	188.1	*	215b	65	240a	15
162a	95	179	552	188.2	*	Sutter		Yolo	
162c	94	180.2	273	Sierra		216	365	246.1	108
162d	81	181a	62	191	*	218	25	245	78
162g	20	177	26	Siskiyou		217	*	243	23
162h	7	181b	20	195	66	Tehama		242	15
162b	*	178.2	14	193	36	221	257	244	9
162e	*	178.1	12	197	15	222	150	246.2	*
San Joaquin		Santa Clara		194	11	219	58	Yuba	
169b	1258	183e	625	200	6	220	8	249	629
169a	545	182	481	198	*	Trinity		247	26
166	203	183h	205	196	*	225	12	248	10
169c	179	183d	204	199	*	224	9		
167	134	183j	174	Solano		223	*		
164.1	114	183b	111	202b	285	226	*		
164.2	72	183i	47	204	274	Tulare			
163	59	183n	40	202a	76	231	2414		
168	38	183o	35	201	39	230	1614		
165	*	183k	29	203.1	33	228.2	888		
San Luis Obispo		183g	27	203.2	7	233	651		
173	124	183i	27	Sonoma		228.1	360		
171	113	183c	19	210.1	221	227.1	223		
174	33	183m	10	209.1	50	227.2	196		
172	29	183a	*	205.2	18	232	36		
170	18	183f	*	205.1	15	229	*		
San Mateo		Santa Cruz		206	13	Tuolumne			
176b	310	184	447	208	13	234.2	26		
176f	35	185.5	154	210.2	9	236	23		
176a	26	185.1	31	207	8	235	8		
175.1	25	185.3	7	209.2	7	234.1	*		
176d	24	185.4	*	Stanislaus		Ventura			
176c	15	185.2	*	215c	928	241b	1027		
175.3	7	Shasta		213	375	241a	400		
176e	6	186	160	214	269	237	395		
176g	*	189.3	158	212.3	219	241c	80		
175.2	*	189.2	134	212.1	132	240b	52		
		190	17	215a	132	238	38		
		187	9	211	119	239	33		

*CASHNI score less than 6.

Figure 1. Map of CASHNI Scores Across California MSSAs

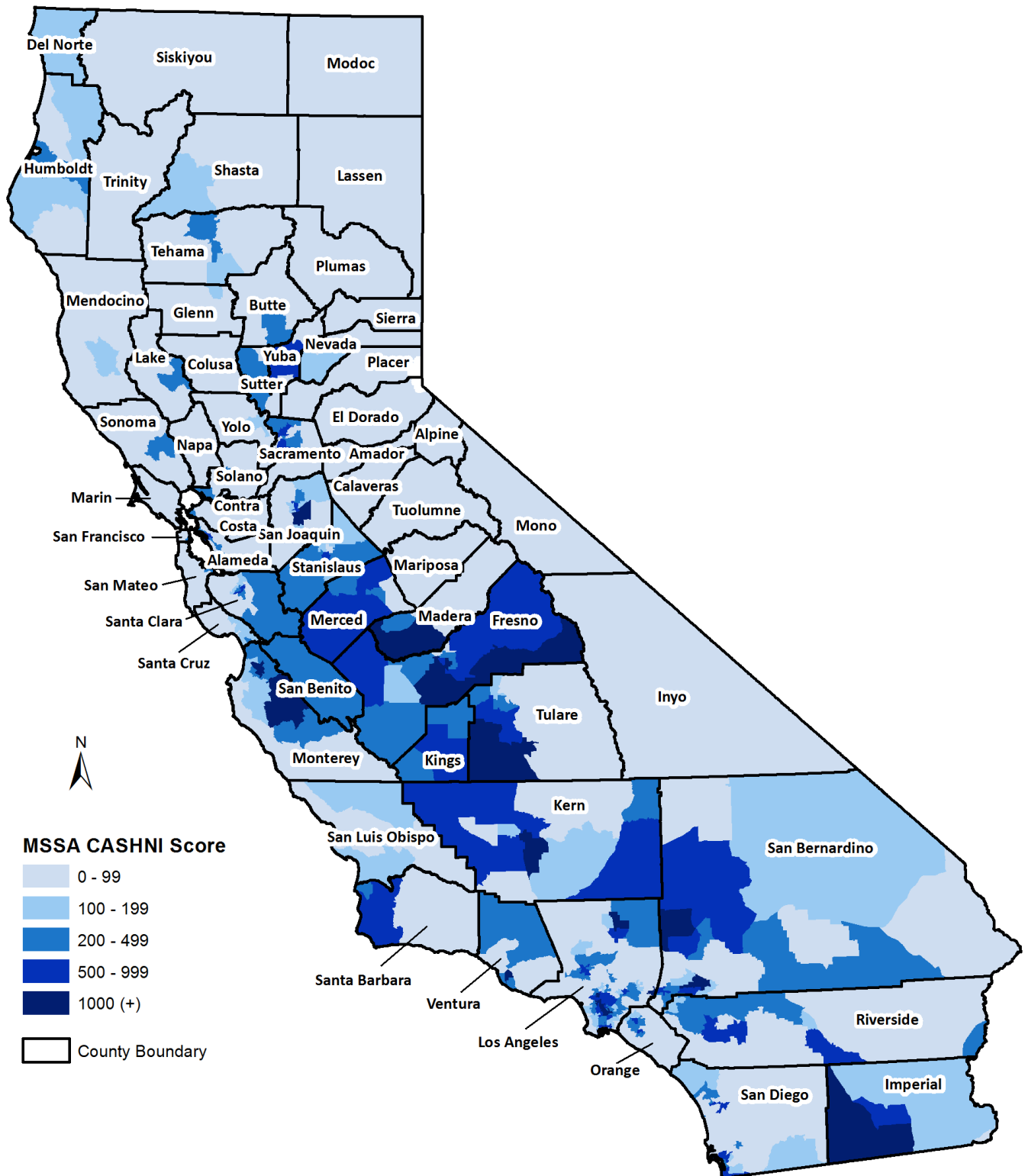


Figure 2. Map of CASHNI Scores Across California MSSAs – Bay Area Detail

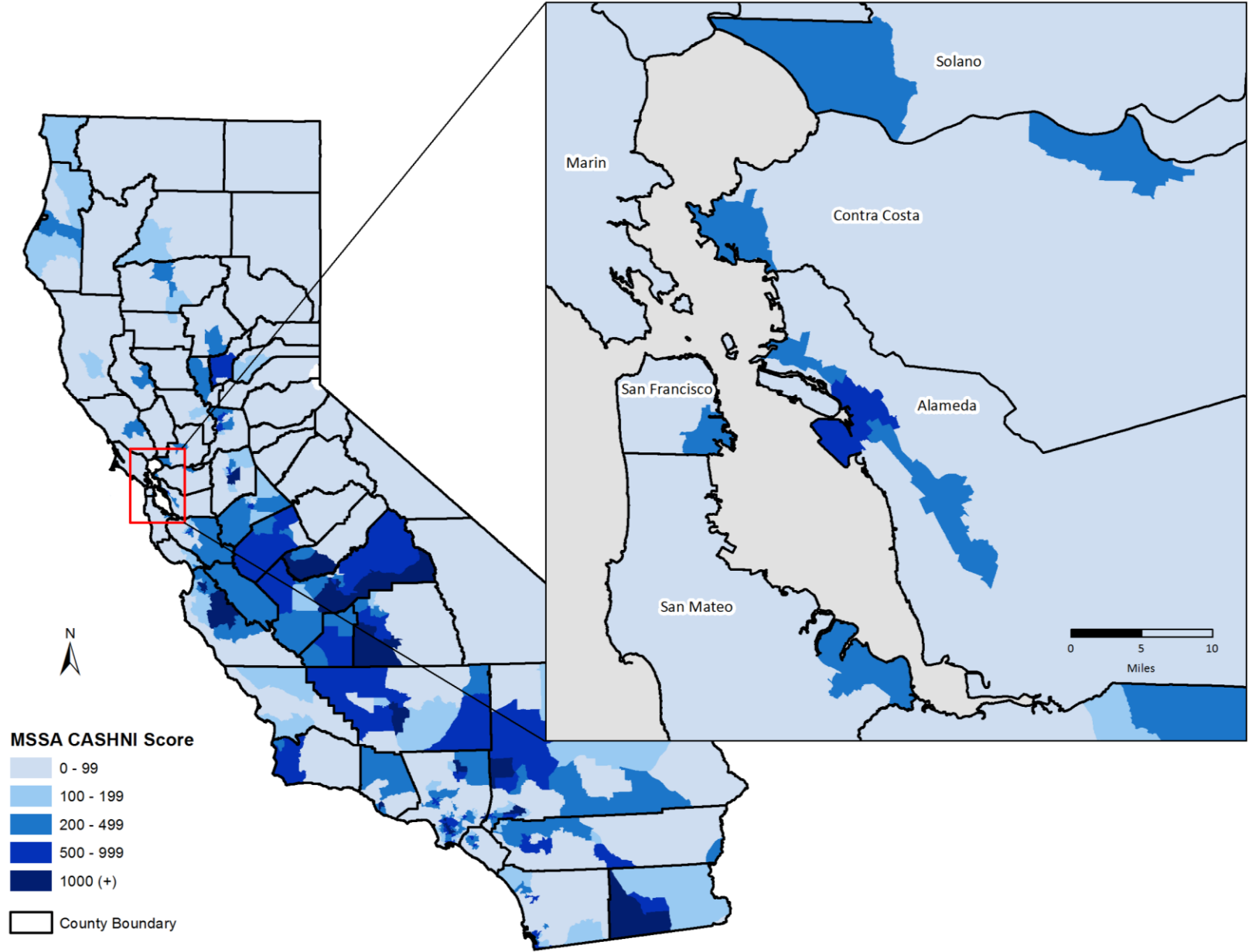


Figure 3. Map of CASHNI Scores Across California MSSAs – Los Angeles County Area Detail

